Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Proposed Amendments to the Service Rules Governing Public Safety Narrowband Operation in the 769-775/799-805 MHz Bands	)	WT Docket No. 13-87
The Development of Operational, Technical And Spectrum Requirements for Meeting Federal, State, and Local Public Safety Communications Requirements Through the Year 2010	)	WT Docket No. 96-86
National Public Safety Telecommunications Council Petition for Rulemaking on Aircraft Voice Operations at 700 MHz	)	RM-11433
National Public Safety Telecommunications Council Petition for Rulemaking to Revise 700 MHz Narrowband Channel Plan	)	RM-11433
Region 24 700 MHz Regional Planning Committee petition for Rulemaking	)	WT Docket No. 96-86 PS Docket No. 06-229
State of Louisiana Petition for Rulemaking	)	RM-11577

COMMENTS OF EF JOHNSON TECHNOLOGIES, INC.

EF Johnson Technologies, Inc. would like to file comments in response to several of the questions posed in the *Seventh Report and Order and Notice of Proposed Rulemaking* in the above captioned proceeding.

EF Johnson Technologies, a privately held company, a holding of Francisco Partners, and is a provider of Private Land Mobile systems and equipment, with offices in

Irving, TX, Lincoln, NE, and Waseca, MN. EF Johnson Technologies has been a provider of radio equipment for 90 years, with a history of Private Land Mobile Radio equipment manufacturing for over forty years. EF Johnson Technologies focuses on innovating, developing, and marketing secure communications solutions to organizations whose mission is to protect and save lives. The Company's products are marketed under the EFJohnson name, and include Project 25 compliant Land Mobile Radio mobile and portable radios, as well as communication system infrastructure.

EF Johnson Technologies would like to comment on the questions posed in the Notice of Proposed Rulemaking with respect to the December 31, 2016 deadline for narrowbanding transition to 6.25 kHz bandwidth technology. It is the belief of EF Johnson Technologies that there has been considerable delay in the development of 6.25 kHz technology that has made practical implementation of a narrowband product much delayed from what was envisioned when the original December 31, 2016 date was codified. The development of standards for Project 25 Phase II, which is a Time Division Multiple Access (TDMA) system designed to give two talk paths within 12.5 kHz of spectrum, has taken longer than originally believed. The key documents that define the common-air-interface were not finalized until December of 2010[1]. Other supporting standards, such as conformance and testing documents continued on in development until mid-2012[2]. Likewise, product development has lagged behind what was initially envisioned. To date, some manufacturers have begun to field systems to the Project 25 Phase II

[1] Telecommunications Industry Association, TIA-102.BBAC, *Project 25 Phase 2 Two-Slot TDMA Media Access Control Layer Description*, December 2010
[2] Telecommunications Industry Association, TIA-102.BCAF, *Project 25 Trunked TDMA Voice Channel Conformance Profiles*, August 2012

standards. However, many are offering products that are software upgradable to Phase II standards at a later date. In addition, there has been no formal program to date within the Project 25 Compliance Assessment Process (P25 CAP) to test Project 25 Phase II equipment.

As a result, of the delays in standards availability, product availability, and a current lack of formally defined and approved compliance testing, products meeting the channel efficiency of 6.25 kHz have only been available within the past year. Furthermore, none of these products have been subject to any formal multi-vendor inter-operability compliance due to the lack of a P25 Phase 2 CAP process as currently exists for P25 Phase 1 products. With this in mind, EF Johnson Technologies agrees with prior petitioners that the December 31, 2016 date should be moved out. Since the availability of product meeting the 6.25 kHz efficiency requirement have only recently been made available, EF Johnson Technologies believes that a new date of December 31, 2026 is appropriate. We would further conclude that the date for requiring a 6.25 kHz mode in the equipment should be moved to December 31, 2024. These dates would allow recently fielded 12.5 kHz efficiency systems to have a useful life of at least 10 years.

As to the question posed in section 88 of the docket, EF Johnson Technologies believes that there is merit to removing the requirement for 6.25 kHz efficiency altogether. It is the position of EF Johnson Technologies that the use of narrowbanding techniques will be driven more effectively by the need for capacity and spectrum on a geographic basis, rather than to require more costly narrowbanding technologies to be deployed throughout

the country. It is believed that there will naturally be incentives for entities within more spectrally crowded areas to move to the more spectrally efficient technologies, while not burdening entities that are in less spectrally congested areas. However, EF Johnson Technologies believed that opening this narrowband spectrum to flexible usage by allowing a mix of broadband usage would lead to severe concerns with interference issues.

EF Johnson Technologies would further like to comment on the questions of requiring certification of products under the P25 CAP process that are detailed in section 127 of the docket. As stated in the background of section 126 of the docket, the P25 CAP process is currently a voluntary program whereby a manufacturer can certify products for compliance to certain Project 25 standards as defined by the appropriate TIA 102 series standards. The intent of P25 CAP testing is to include testing in three areas, those being performance, conformance, and interoperability. Performance testing is to ensure that products conform to standards of performance, as defined by TIA documents. Current performance tests for radio equipment include transmitter and receiver tests as defined in TIA documents TIA-102.CAAA-C "Digital C4FM/CQPSK Transceiver Measurement Methods", and TIA-102.CAAB-C "Land Mobile Radio Transceiver Performance Recommendations Project 25 – Digital Radio Technology C4FM/CQPSK Modulation"[3]. This testing is applicable to both trunked and conventional systems. Conformance testing is intended to test for adherence to protocol standards. An example would be that a unit gives a correct response to a given stimulus. However, there are currently no

[3] US Department of Homeland Security Office for Interoperability and Compatibility, P25-CAB-CAI_TEST_REQ, *Project 25 Compliance Assessment Program Baseline Common Air Interface Testing Requirements*, March 2010

conformance tests defined for radio equipment within the P25 CAP process. The third area of testing is interoperability testing. This is testing of a subscriber radio product for operation in various infrastructures, and conversely, testing of infrastructure products with various subscriber radio products. Current P25 CAP tests define testing for trunked operation as defined in document TIA-102.CABA-A "Project 25 Interoperability Testing for Voice Operation in Trunked Systems", and subsequent addendum TIA-102.CABC-A-1[4]. From the above discussion, the current state of the P25 CAP is that products are required to undergo testing for transceiver performance and trunking interoperability in order to be certified under the P25 CAP program.

Section 90.548 of the Commission's rules define the relevant TIA standards that are required to be complied with in order for products to be certified for operation within the narrowband portion of the 700 MHz band. The requirements for voice operation, as stated in the Commission's rules are compliance to TIA-102.BAAA "Project 25 FDMA Common Air Interface – New Technology Standards Project – Digital Radio Technical Standards" and TIA-102.BABA "Project 25 Vocoder description". From the above requirements, it is apparent that a trunking mode of operation is not a requirement for radio type certification. Further, the above referenced documents do not include a requirement for transceiver performance compliance, other than transmitter performance requirements as related to type certification requirements. It is, therefore, our understanding that the P25 CAP testing program, as it currently exists, does not test for the parameters that are required under section 90.548 of the FCC rules. Likewise section 90.548 of the Commission's rules defines requirements for transmitters designed for data

[4] *Id.*

transmission. Again, there is no overlap between the required standards and those being tested in the P25 CAP process.

We believe that there are further concerns with requiring certification under P25 CAP for 700 MHz equipment prior to sale or marketing of such equipment. Part of the P25 CAP process requires interoperability testing. For interoperability testing, the P25 CAP process requires that a subscriber radio be tested with infrastructure manufactured by at least three different manufacturers. That means for subscriber manufacturers that do not manufacture their own infrastructure, they are required to test their product with at least three other manufacturer's infrastructure. All of the current infrastructure manufacturers offer interoperability testing to all subscriber manufacturers. However, the conditions of this testing vary with infrastructure manufacturer. Some infrastructure manufacturers do testing upon request. Others conduct testing events, where multiple subscriber manufacturers are invited to test in a group setting. These testing events are offered periodically, but only when a sufficient number of subscriber manufacturers are interested in participating. Therefore, there may be a considerable period of time between testing events. Generally, subscriber manufacturers will submit their radios for test only after the designs are sufficiently mature to ensure that the test is passed. As a result, there may be a considerable period of time between when a product is ready to be marketed and sold to when a P25 CAP certification process can be completed. We believe that this time delay puts an undue delay in the ability to introduce new products into the marketplace. Furthermore, the delays are not under the control of the

manufacturer being certified, and in many cases, are potentially controlled by their competitors.

There are further concerns regarding the interoperability testing. Since interoperability testing tests for interoperability between a subscriber radio and an infrastructure, it is not always clear where the fault lies when interoperability is not achieved. Generally, one might assume that existing infrastructure has previously been tested and verified for interoperability with other subscriber units, and therefore is not at fault. However, this is not always the case, as experience has shown. Therefore, a clear verdict of a test is not always achievable.

EF Johnson Technologies does believe that the P25 CAP is an important program. We have maintained a recognized P25 CAP laboratory throughout the duration of the program, and have certified various products to that program. However, because of the noted concerns, we do not believe that certification under P25 CAP should be a requirement for 700 MHz equipment prior to sale or marketing of such equipment.

EF Johnson Technologies would like to express its appreciation to the Commission for the opportunity to provide comment on these matters.

Respectfully Submitted,

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